# ***Kai Millyard Associates***

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August 28, 2015

Ms Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th floor
PO Box 2319
Toronto, ON
M4P 1E4

RE: EB-2015-0049 & 0029 Transcript Undertaking

Dear Ms Walli,

Please find enclosed 2 copies of Transcript Undertaking JT3.1 from Mr Neme given during the Technical Conference on August 17th.

The response is ebing emailed to all parties and will be uploaded to the RESS.

Sincerely,

(Mr.) Kai Millyard
Case Manager
Green Energy Coalition

ec: All parties

**Green Energy Coalition**

**Undertaking**

**To Dr. Higgin**

**Undertaking:**

GEC to provide (a) the average DSM annual savings for 2015-2020 to be the annual cubic metre $m^3$ amount; (b) the cost/credit based on a remaining lifetime in 2020 of 14 years (that also means no assumption about higher savings DSM programs post 2020); (c) the Synapse low price forecast from table 4 on page 31 of their March 2015 report

**Response**:

GEC has understood Dr. Higgin's request to Mr. Neme to be to produce alternative values to those presented in Table 3 of his evidence to reflect the following three changes:

1. Values are expressed for average annual savings from the utilities' filed DSM plans rather than for 2020 savings values;
2. Values for avoided carbon emissions to be reduced to reflect the presumption that there would be no benefit for the first two years because there would be no value to avoided carbon emissions prior to 2018; and
3. Values for avoided carbon emissions to be calculated using Synapse's low estimates rather than the "mid case" estimates proposed by Mr. Chernick in his testimony and used by Mr. Neme in his original evidence.

Mr. Neme's response is as follows:

1. Dr. Higgin was mistaken in assuming that the annual savings values which Mr. Neme used in Table 3 of his evidence were based on 2020 savings levels. They were, in fact, based on the average annual savings from 2016 to 2020 (as noted in footnote #37). Thus, no change is needed to address this request.

2. Mr. Neme understands that the estimates of the value of avoided carbon emissions were presented by Synapse as starting in 2020 because that was the first year in which it was assumed that they would be applicable in the context of the pending application of the U.S. Environmental Protection Agency's regulation of existing fossil fuel-fired power plants (known as the "Clean Power Plan" regulations). However, in the Ontario context, reductions in carbon emissions are likely to have value before 2020. Mr. Chernick has suggested that 2017 would be a reasonable year in which to assume that such value would begin. Thus, Dr. Higgin's suggestion that an analysis be conducted to estimate the

lower value of carbon emission reductions for only 14 years rather than an average measure life of 16 years would be applicable only for 2015 program savings. It is important to note that Mr. Neme's Table 3 only addressed the years 2016 to 2020. Nevertheless, to be helpful, Mr. Neme has computed the value of avoided carbon emissions for 2015 savings to be $0.78 per annual $m^3$ saved assuming that there would be no value for the first two years of savings in a stream of 16 years of savings.

With respect to the 2016 through 2020 DSM program years, it is important to emphasize that Mr. Neme's estimate of $0.98 for net present value of carbon emission reduction benefits produced during the period was calculated using a single stream of values for emission reductions and applying that stream to the average savings for all five years. Dr. Higgin is implicitly asking for a more granular analysis that requires separate estimates for each year. Consistent with the logic discussed above for 2015, it would be reasonable to assume that the utilities and their ratepayers would only realize carbon emission reduction value from the last 15 years of a stream of 16 years of savings from measures installed in 2016. The value associated with savings in that year would be $0.88 per first year $m^3$ saved (again, rather than the $0.98 average estimated in Mr. Neme's evidence table). Because the 2017 program savings would be produced in the first year in which carbon emission reductions may begin to have value, there would be no reason to estimate the benefits for less than the full 16 year average measure life. In other words, using the estimated carbon emission reduction values provided by Mr. Chernick, the net present value of the savings produced in 2017 can be estimated to be $0.98 per first year $m^3$ saved – the same as estimated in Mr. Neme's Table 3. Interestingly, when one looks in this same level of detail at the value of carbon emission reductions produced in 2018, 2019 and 2020, they are higher than the $0.98 per first year $m^3$ shown in Mr. Neme's Table 3 ($1.04, $1.10 and $1.17 per first year $m^3$ saved, respectively). This is because Synapse has forecast that the value of carbon emission reductions grows faster than the rate of inflation after the first year in which regulations go into effect.

For clarity, a table summarizing the value of avoided carbon emissions by program year discussed above (again, assuming that carbon emission reductions begin to go into effect in 2017) is provided below. Each of these annual values could be used in lieu of the 2016-2020 average value of $0.98 value in the first row of Mr. Neme's Table 3. At a high level, this more granular, year-by-year analysis suggests that the average value for savings produced over the 2016 to 2020 period are a little higher than estimated by Mr. Neme in Table 3 of his evidence – more like $1.04 per first year $m^3$ of savings than the $0.98 suggested in Table 3. As the table below also shows, if one assumed that carbon

emission reductions did not begin to have value until 2018 (rather than 2017), the average value generated by the year-by-year approach requested by Dr. Higgin would be $0.96 per annual $m^3$ saved over the 2016-2020 period.

| Program Year | NPV per Annual $m^3$ Saved | |
|---|---|---|
| | $CO_2$ Emission Reductions Begin to Have value in 2017 | $CO_2$ Emission Reductions Begin to Have value in 2018 |
| 2015 | $0.78 | $0.69 |
| 2016 | $0.88 | $0.78 |
| 2017 | $0.98 | $0.88 |
| 2018 | $1.04 | $0.98 |
| 2019 | $1.10 | $1.04 |
| 2020 | $1.17 | $1.10 |
| 2016-2020 Average | $1.04 | $0.96 |

3. Mr. Neme estimated (in Table 3 of his evidence) the net present value of carbon emission reductions per first year $m^3$ of gas savings over the 2016 to 2020 program years to be $0.98. That estimate is based on Synapse's "mid case" estimates of the value of avoided carbon emissions. The comparable estimate using Synapse's "low case" estimates of avoided carbon emissions is $0.69 per first year $m^3$ saved (about 30% less than the "mid case"); the comparable estimate using Synapse's "high case" estimates is $1.39 per first year $m^3$ saved (about 41% more than the "mid case"). Note that these estimates were developed using the same high level, multi-program year, average analysis approach Mr. Neme used in developing Table 3. They do not reflect the more granular, year-by-year approach discussed in response to part 2 of this undertaking above (which, as discussed above, would produce slightly higher average values over the period in question if one assumed carbon emission reductions begin to have value in 2017).